

REMARKS

Applicant has provided a complete claim listing, showing the current status of the claims, including those claims that were withdrawn in response to the restriction requirement.

With respect to the Examiner's remarks, the Applicant makes the following arguments.

Applicant, initially, notes for the record, the Examiner's acknowledgment of Applicant's election of Group I with traverse in response to the restriction requirement.

In point four (4) of the Office Action, the Examiner has rejected claims 1-6, 8, 10-13, 15, 16, 18-21 and 45 under 35 § U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Owen (U.S. Patent No. 5,248,408).

Applicant respectfully disagrees.

The Examiner has stated that the cited reference, Owen, fails to disclose the monitoring of the temperature of the spent catalyst particles in the stripping zone to determine whether the temperature exceeds the target stripping temperature. The Examiner has clearly demonstrated that the rejected claims can not be anticipated by the cited reference, since they fail to teach each and every element of the claims.

The Examiner argues in point 5 of the Office Action that that it would have been obvious to disclose the monitoring of the temperature of the spent catalyst particles.

Applicant respectfully disagrees.

Rejected claim 1 contains several unique and non-obvious elements not found in the cited prior art patent. The stated function of the present invention is to provide for a more efficient cracking process. This is achieved by the lowering of the temperature of the target stripping range to about 950° to about 1075° F. This is markedly different from the range of the applied

prior art reference, which discloses a range from between 1050° to 1200° and actually teaches the opposite of the present invention, namely increasing not decreasing the temperature of the stripping zone over the reactor outlet temperature. Specifically, Applicants respectfully submit that the only time catalyst cooling is mentioned in the Owens et al. '408 disclosure is after the catalyst in the stripper already has been heated to a temperature above the reactor outlet temperature by addition of hot catalyst from the regenerator. In this regard, the Examiner's attention is directed to the Owens et al. '408 disclosure at, *inter alia*, col. 6, lines 37-48; col. 8, line 63 to col. 9, line 71; col. 9, lines 50-66; col. 16, lines 62-68. Moreover, at col. 10, lines 21-39, Owens et al. '408 even describes the disclosed heating of the catalyst in the stripper as seeming "counterproductive."

The disclosed range of claim 1 is not merely an obvious modification of range found in the prior art, but a significant difference from what is expressly taught by the prior art – only to use a catalyst cooler when heating the stripper above the reactor outlet temperature and to maintain the stripper temperature at such high temperatures. The Applicants have found that operating in the method taught by the Owens et al. '408 reference would be detrimental to the catalyst and that the disclosed range allows for improved extension in catalyst life. This in turn raises the efficiency of the entire apparatus. The range disclosed by the Applicants is neither disclosed directly nor is obvious in light of the prior art.

Additionally, the prior art is only directed to fluidized catalytic cracking processes. The present invention is not limited to these processes, but is applicable to deep catalytic cracking (DCC) systems and catalytic pyrolysis process (CPP). Page 9, lines 16-19 of the present application. The prior art patent does not teach the ability to engage in the other processes. Nor

does it suggest possible modifications of taught process and apparatuses that would allow it to do so.

Lastly, the cited prior art fails to disclose the need for a temperature monitoring system for the spent catalyst. Applicant respectfully submits that the Examiner is mistaken in asserting that it would have been obvious to include this element. The prior art does not teach the use of a temperature monitoring system to maintain a narrow range of temperature nor a reason to do so. As such there would be no need to aggressively monitor the temperature to maintain maximum efficiency. Therefore, there is no suggestion or motivation found in the prior art that would teach the usage of automated temperature monitors. Even if there was a suggestion or motivation to include the temperature monitor, which Applicant does not concede, the resulting combination would fail to teach all the elements of the present invention. An obvious modification of the prior art would still fail to teach the disclosed range, and therefore fail to teach a process and apparatus that would maintain that range.

The cited prior art patent is incapable of teaching the present claimed an increased efficiency catalytic cracking process by using a narrow temperature range, which is below the reactor outlet temperature, and a temperature monitoring mechanism to ensure the that range is maintained. Therefore, the cited prior art can not be said to render obvious the present invention.

In points 6 to 13 of the Office Action, the Examiner rejects claims 2-6, 8, 10-13, 15, 16, 18-21 as obvious under 35 U.S.C. § 103(a) in view of Owen.

All the rejected claims are either directly dependent or multiply dependent on claim 1. Claim 1, as demonstrated above, is not obvious in light of the cited prior art. Therefore, a claim that is dependent on claim 1 is also non-obvious.

In point 14 of the Office Action, the Examiner has rejected claim 45 as obvious under 35 U.S.C. § 103(a) in view of Owen.

It is Applicant's position that the arguments made for the non-obviousness of claim 1 are applicable, and demonstrate the non-obvious of claim 45.

In point 15 of the Office Action, the Examiner has rejected claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Owen in view of Raterman (U.S. Patent No 5,296,131)

Claim 7 is dependent on claim 5 which is in turn dependent on claim 1. As illustrated above, claim 1 is not obvious in view of the cited prior art. Applicants further submit that the secondary reference does not (and was not relied on by the Examiner to) teach the above-described deficiencies of the primary reference. Therefore, claims 5 and 7 can not be obvious either.

In point 16 of the Office Action, the Examiner rejected claims 9, 14, 17 and 22 as unpatentable over Owen in view of Long (U.S. Patent No. 5,571,482)

The applicant points out that the rejected claims are dependent on claim 1 either directly or through multiple dependencies. Applicants further submit that the secondary reference does not (and was not relied on by the Examiner to) teach the above-described deficiencies of the primary reference. Therefore, they can not be obvious. Additionally, Applicant points out that the Long patent teaches only an apparatus and process for use with a FCC process. As stated earlier, the present invention has application in multiple types of catalytic cracking processes. Therefore, any combination of the cited prior art would fail to teach all the elements of the present invention and as such can not render the present invention obvious.

Lastly, Applicant notes that in paragraph 19 of the Office Action, the Examiner made of record Mayes (US 4272402) and Stother (US 4406776) as pertinent to Applicant's disclosure, but did not rely on these references to reject the claims.

CONCLUSION

In light of the forgoing arguments, Applicant asserts that the rejections have been overcome and the claims are in condition for allowance.

Respectfully submitted,



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